

REMARKS

This is a request for continued examination of the presently pending patent application. This Request for Continued Examination comes after filing a Notice of Appeal and after a pre-appeal brief. The pre-appeal brief did not result in the allowance of any claims. Accordingly, many of the presently pending claims have been canceled and new claims have been submitted herewith. In particular, in this response, claims 30, 39, 42-43, 50-54, and 56 have been canceled, claims 28, 31-38, 40-41, 44-47, 55, and 57 have been amended, and new claims 57-70 have been added. For the reasons set forth below, the Patent and Trademark Office is respectfully requested to find that the claims now define new and non-obvious subject matter and allowance is respectfully requested.

Independent claims 65 and 70 are new and they are materially different from the former pending independent claims. Claim 65, for example, calls for injecting an oxidizing gas into a bottom portion of a vertical oriented column reactor. As seen in the drawings in Applicants' application, the reactor is in the form of a column with both the oxidizing gas and the influent to be treated moving upwardly through the column reactor. Claim 65 also calls for suspending a bed of catalyst material in the column reactor to form a fluidized bed of catalyst material in the reactor. Claim 65 also states that a portion of the fluidized bed is disposed in the lower portion of the column reactor. Further, claim 65 is limited to where the oxidizing gas injected into the column reactor functions to suspend the bed of catalyst material in the reactor. Another method step set forth in claim 65 calls for injecting the influent to be treated into the bottom portion of the column reactor where the influent is contacted with the oxidizing gas in the presence

of the fluidized bed of catalyst material. The fluidized bed of catalyst material, as the claim provides, promotes the oxidation reaction of organic material in the influent, or promotes the adsorption of organic material by the bed of catalyst material, thereby yielding treated water. In addition, claim 65 now calls for the column reactor to include an immersed membrane filtration unit disposed in the upper portion of the column reactor. At least a portion of the fluidized bed of catalyst material is maintained below the membrane filtration unit in the column reactor. After directing the influent through the fluidized bed of catalyst material and the oxidizing gas in the lower portion of the column reactor, the method includes filtering at least a portion of the treated water in the immersed membrane filtration unit to form a filtered influent. The method includes directing the filtered influent from the reactor. Further, some of the influent is not treated and is deemed or termed non-permeated treated water. The method includes bypassing the immersed membrane filtration unit with at least a portion of the non-permeated treated water. Further, at least a portion of the non-permeated treated water is recirculated from an upper portion of the column reactor, through a recirculation line that lies outside of the column reactor and back to the lower portion of the column reactor. Finally, the method includes recirculating at least a portion of the oxidizing gas from the upper portion of the column reactor, through a gas recirculation loop disposed outside of the column reactor and back into the lower portion of the column reactor.

In the prior office action, the claims were rejected as being drawn to obvious subject matter in view of the patent to Cote, U.S. Patent No. 5,607,593 in view of the patent to Bybell, U.S. Patent No. 4,076,617. Respectfully, the new claims as submitted

herewith, particularly independent claims 65 and 70, define over the obvious teachings of Cote and Bybell.

First, it does not appear that either Cote or Bybell teach a method or process for treating water or wastewater where there is a suspended fluid bed of catalyst material in a column reactor where the fluidized bed of catalyst material includes at least portions that are disposed below an immersed membrane filtration unit. There is no fluidized bed of catalyst material in either Cote or Bybell.

It is doubtful that the Cote system can be termed a column reactor. There is a tank 1 shown in Cote with a number of membrane filtration devices 3 supported on a floor and overlying a chamber that receives filtered influent. The influent, in figure 1 in Cote, is directed into the top of the tank as is the oxidizing gas 22. See, figure 1 of Cote.

Claim 65 specifically calls for injecting the influent to be treated into the bottom portion of the column reactor and also injecting the oxidizing gas into the bottom of the column reactor. Cote never discloses injecting both the influent to be treated and the oxidizing gas into the bottom portion of the reactor.

Claim 65 calls for directing influent through the fluidized bed of catalyst material, and after directing the influent through the fluidized bed of catalyst material and oxidizing the gas, the method or process calls for filtering at least a portion of the treated water and the immersed membrane filtration unit disposed in the upper portion of the column reactor over the fluidized bed. There is no teaching of this method or process in either Cote or Bybell.

Claim 65 also calls for bypassing the immersed membrane filtration unit with at least a portion of the treated water where that portion is termed or referred to as non-permeated treated water. Next, the claim calls for recirculating at least a portion of the non-permeated treated water from the upper portion of the column reactor through a recirculation line that lies outside of the column reactor and back to the lower portion of the column reactor. Further, claim 65 calls for recirculating at least a portion of the oxidizing gas from the upper portion of the column reactor, through a gas recirculation line disposed outside of the column reactor and back to the lower portion of the column reactor. Thus, there are two exterior recirculating lines, one for the non-permeated water, and one for the oxidizing gas. Neither Cote nor Bybell teach this method or process. The claims are effectively restricted to providing two independent recirculating lines, one for non-permeated water, and one for oxidizing gas.

Claim 70 is an apparatus claim, but generally parallels independent claim 65. For the same reasons set forth above, it is respectfully urged that claim 70 and the claims dependent therefrom are also in contention for allowance.

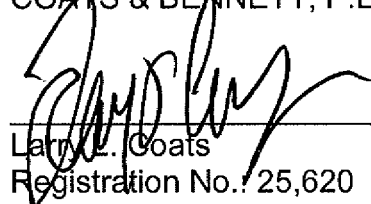
In addition, Applicants amended the specification in accordance with the requirement of the Final Office Action. Applicants note that the originally filed application stated that the effluent and the oxidizing gas are injected in a "counter-current." Applicants previously amended this application to state that the effluent and the oxidizing gas are injected in a "co-current." However, the Examiner alleges that these previously filed amendments to the specification introduce new matter. Although Applicants disagree, the specification has been amended to reflect the language as originally filed in order to expedite prosecution. Applicants point the Examiner to Fig. 1

which clearly shows that the oxidizing gas and the water flow through the filtration system co-currently. Accordingly, the previously filed amendments were amendments to correct an obvious error that does not constitute new matter. After viewing the specification in full and the accompanied drawings, one of ordinary skill in the art would recognize the existence of the error and the appropriate correction.

For the reasons set forth above, it is respectfully urged that the present application is in condition for allowance and allowance is requested.

Respectfully submitted,

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